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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/786,046

02/26/2004

Shinichi Takeshima

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OLIFF & BERRIDGE, PLC

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EXAMINER

WARTALOWICZ, PAUL A

ART UNIT

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1793

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/786,046	<b>Applicant(s)</b> TAKESHIMA, SHINICHI	
	<b>Examiner</b> PAUL A. WARTALOWICZ	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-8 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8 and 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/4/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Response to Arguments***

Applicant's arguments filed 3/4/08 have been fully considered but they are not persuasive.

Applicant argues that Nawa forms bulk ceramics and thus only coarse particles are formed.

However, Nawa discloses particle sizes in the range of 1 micrometer or *less*. Therefore, the particle size cannot be used to determine whether or not a microemulsion occurs. That Nawa discloses particle sizes less than 1 micrometer encompass the range of a few nanometers to a few tens of nanometers that would be indicative of a microemulsion.

The disclosure of Nawa allows for bulk ceramics *and* fine metal oxide particles. The limitation of metal oxide particles having a composition uniform in the atomic level is a feature not claimed. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., metal oxide particles having a composition uniform in the atomic level) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that Nawa does not disclose the use of a surfactant, or fine metal oxide particles having a composition uniformity at the atomic level, as claimed.

However, Nawa is not relied upon for the teaching of the use of a surfactant. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Additionally, it appears that the combination of Nawa, Sherif, and Chittofrati substantially teach the process as claimed such that the properties of the claimed invention including the uniformity of the composition of the composition at the atomic level would be substantially similar in the process of the prior art.

Applicant argues that Chittofrati does not teach or suggest a reaction occurring at the interface between the aqueous and oily phases, resulting in a complex oxide in which metals are distributed at the element level.

However, Chittofrati teaches a process where the first metal is in the aqueous phase and the second metal is in the oil phase where an alkali is added. Chittofrati is not relied upon to teach hydrolysis occurring from the direct result of the reaction at the interface of the water/oil emulsion. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Additionally, Sherif teaches a process for the formation of metal oxides from the corresponding metal alkoxides by a hydrolysis reaction (col. 1, lines 9-11) wherein a

Art Unit: 1793

surfactant is added to a solution comprising metal alkoxide for the purpose of forming an emulsion (col. 2, lines 15-20) and the formation of metal oxides from corresponding metal alkoxide by a hydrolysis reaction (col. 1, lines 9-11).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is requested to point to the recitation of the specification that lends support to the limitation in claim 1, lines 4-5 of "alkoxide or an acetate-metal complex."

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4-6, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nawa et al. (U.S. 5863850) in view of Sherif (U.S. 5023071) and Chittofrati et al. (U.S. 5670088).

Nawa et al. teach a process for making a zirconia based ceramic material (col. 1, lines 10-12) comprising the mixed oxide of cerium, titanium, and zirconium (col. 5, lines 63-66) wherein an aqueous solution of zirconium and cerium salts is mixed with an organic solution of an alkoxide of titanium to obtain a mixed solution (col. 6, lines 40-44) wherein the mixed solution is hydrolyzed to generate a precipitate (col. 6, lines 44-45) and then heated at a temperature of 800°C (col. 6, lines 34-36). This disclosure meets the limitation wherein a water-in-oil emulsion system or microemulsion system is used due to the explanation that mixing an organic phase with an aqueous phase will necessarily result in a water-in-oil type emulsion or microemulsion. As to the limitation wherein the size of the aqueous phase of the water-in-oil type microemulsion is in the range of 2-40 nm, Nawa et al. teach the process limitations of the claimed invention such that Nawa et al. inherently teach wherein the size of the aqueous phase of the water-in-oil type emulsion is in the range of 2-40 nm.

Nawa fails to teach the aqueous phase emulsified in the organic phase with a surfactant. Nawa et al. also fail to teach wherein said organic phase having dissolved therein a zirconium alkoxide, wherein conducting said organic phase with said aqueous phase to produce a product of zirconium hydroxide by hydrolysis reaction of the zirconium alkoxide at their interface between said organic and aqueous phases while incorporating the zirconium element in the product.

Sherif, however, teaches a process for the formation of metal oxides from corresponding metal alkoxide by a hydrolysis reaction (col. 1, lines 9-11) wherein a surfactant is added to a solution comprising metal alkoxide for the purpose of forming an emulsion (Throughout document, particularly col. 2, lines 15-20).

Chittofrati et al. teach a method of making mixed metal oxides (col. 1) wherein a microemulsion is formed by contacting an organic solvent with an organic salt disposed therein with an aqueous solvent with an aqueous salt therein in the presence of a surfactant (col. 3-4).

Therefore, it would have been obvious to contact an organic phase with an aqueous phase, each with respective soluble salts therein, in the presence of a surfactant as taught by Chittofrati et al.

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide adding a surfactant to a solution comprising metal alkoxide for the purpose of forming an emulsion (Throughout document, particularly col. 2, lines 15-20) in a substantially similar process of forming metal oxides

from corresponding metal alkoxide by a hydrolysis reaction (col. 1, lines 9-11) as taught by Sherif and Chittofrati et al.

Additionally, Sherif teaches a process for the formation of metal oxides from corresponding metal alkoxide by a hydrolysis reaction (col. 1, lines 9-11) wherein the process of initiating the hydrolysis of an alkoxide to form a metal oxide is applicable to alkoxides of titanium or zirconium (col. 1, lines 60-65) for the purpose of forming metal oxide powders having better flow and density (col. 1, lines 55-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein the process of initiating the hydrolysis of an alkoxide to form a metal oxide is applicable to alkoxides of titanium or zirconium (col. 1, lines 60-65) for the purpose of forming metal oxide powders having better flow and density (col. 1, lines 55-58) such that zirconium alkoxide is substituted for titanium alkoxide as taught by Sherif.

As to the limitations of the compound oxide particles having a composition that is uniform at the atomic level, the combined prior art teach a substantially similar process such that the properties of the product of said process are substantially similar to those of the product of the present invention.

Claims 7, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nawa et al. (U.S. 5863850) in view of Chittofrati et al. (U.S. 5670088) and Sherif (U.S. 5023071) and Uenishi et al. (U.S. 20020061816).



Nawa et al. teach a process for making a zirconia based ceramic material as described above in claim 1. The combined teachings of Nawa et al. and Sherif meet the claimed limitation wherein a process for production of an exhaust gas purification catalyst carrier by a production process such that characteristics of the product are inherently taught because the limitations of the process of making are disclosed. If

Nawa et al. fail to teach wherein a process for production of an exhaust gas purification catalyst carrier by a production process, Uenishi et al., however, teach a process for purifying exhaust (paragraph 0004, lines 1-5) wherein a mixed oxide comprising zirconium and cerium are used as catalysts (paragraph 0008, lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein a mixed oxide comprising zirconium and cerium are used as catalysts (paragraph 0008, lines 1-5) as taught by Uenishi et al.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 1793

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz  
June 4, 2008

/Steven Bos/  
Primary Examiner  
A.U. 1793